

Algebra 2

Common to both Cores (based on new core language)	New Core Only	Old Core Only
<p><i>Standard 1: Students will use the language and operations of algebra to evaluate, analyze and solve problems.</i></p> <p>Objective 1: Evaluate, analyze, and solve mathematical situations using algebraic properties and symbols.</p> <ul style="list-style-type: none"> Solve and graph first-degree absolute value equations of a single variable. Solve radical equations of a single variable, including those with extraneous roots. Solve absolute value inequalities of a single variable. Add, subtract, multiply, and divide rational expressions and solve rational equations. Simplify algebraic expressions involving negative and rational exponents. 	<ul style="list-style-type: none"> Solve compound inequalities of a single variable. 	<ul style="list-style-type: none"> Sketch the solutions of absolute value and quadratic inequalities of one variable on a number line. Solve problems involving absolute value functions algebraically and graphically.
<p>Objective 2: Solve systems of equations and inequalities.</p> <ul style="list-style-type: none"> Solve systems of linear equations algebraically and graphically. Graph the solutions of systems of linear inequalities on the coordinate plane. 	<ul style="list-style-type: none"> Solve systems including absolute value, and quadratic equations. Solve application problems involving systems of equations and inequalities. Graph the solutions of systems with absolute value and quadratic inequalities. 	<ul style="list-style-type: none"> Solve systems of equations with no more than three variables using technology.
<p>Objective 3: Represent and compute fluently with complex numbers.</p> <ul style="list-style-type: none"> Simplify numerical expressions, including those with rational exponents. Simplify expressions involving complex numbers and express them in standard form, $a + bi$. 		<ul style="list-style-type: none"> Identify the need for the square root of a negative number and define the imaginary number i. Simplify expressions involving radical expressions (Algebra 1) including square roots of negative numbers.

<p>Objective 4: Model and solve quadratic equations and inequalities.</p> <ul style="list-style-type: none"> • Model real-world situations using quadratic equations. • Approximate the real solutions of quadratic equations graphically. • Solve quadratic equations of a single variable over the set of complex numbers by factoring, completing the square, and using the quadratic formula. • Solve quadratic inequalities of a single variable. • Write a quadratic equation when given the solutions of the equation. 		<ul style="list-style-type: none"> • Find the vertex, maximum or minimum values, intercepts, and axis of symmetry of a quadratic or absolute value function, algebraically, graphically, and numerically.
<p><i>Standard II: Students will understand and represent functions and analyze function behavior.</i></p> <p>Objective 1: Represent mathematical situations using relations.</p> <ul style="list-style-type: none"> • Describe a pattern using function notation. • Determine when a relation is a function. • Determine the domain and range of relations. 	<ul style="list-style-type: none"> • Model real-world relationships with functions. 	
<p>Objective 2: Evaluate and analyze functions.</p> <ul style="list-style-type: none"> • Compose functions when possible. • Add, subtract, multiply, and divide functions. • Determine whether or not a function has an inverse, and find the inverse when it exists. 	<ul style="list-style-type: none"> • Find the value of a function at a given point. • Identify the domain and range of a function resulting from the combination or composition of functions. 	
	<p>Objective 3: Define and graph exponential functions and use them to model problems in mathematical and real-world contexts.</p> <ul style="list-style-type: none"> • Define exponential functions as functions of the form $y = ab^x$, $b > 0, b \neq 1$. • Model problems of growth and decay using exponential functions. • Graph exponential functions. 	

	Objective 4: Define and graph logarithmic functions and use them to solve problems in mathematics and real-world contexts. <ul style="list-style-type: none"> • Relate logarithmic and exponential functions. • Simplify logarithmic expressions. • Convert logarithms between bases. • Solve exponential and logarithmic equations. • Graph logarithmic functions. • Solve problems involving growth and decay. 	
<p><i>Standard III: Students will use algebraic, spatial, and logical reasoning to solve geometry and measurement problems.</i></p> <p>Objective 1: Examine the behavior of functions using coordinate geometry.</p> <ul style="list-style-type: none"> • Identify the domain and range of the absolute value, quadratic, radical, sine, and cosine functions. • Graph the absolute value, quadratic, radical, sine, and cosine functions. • Graph functions using transformations of parent functions. • Write an equation of a parabola in the form $y = a(x - h)^2 + k$ when given a graph or an equation. 		<ul style="list-style-type: none"> • Solve problems using graphs of sine and cosine functions.
<p>Objective 2: Determine radian and degree measures for angles.</p> <ul style="list-style-type: none"> • Convert angle measurements between radians and degrees. • Find angle measures in degrees and radians using inverse trigonometric functions, including exact values for special triangles. 		
<p>Objective 3: Determine trigonometric measurements using appropriate techniques, tools, and formulas.</p> <ul style="list-style-type: none"> • Define the sine, cosine, and tangent functions 		

using the unit circle. <ul style="list-style-type: none"> Determine the exact values of the sine, cosine, and tangent functions for the special angles of the unit circle using reference angles. Find the length of an arc using radian measure. Find the area of a sector in a circle using radian measure. 		
<i>Standard IV: Students will understand concepts from probability and statistics and apply statistical methods to solve problems.</i> Objective 1: Apply basic concepts of probability. <ul style="list-style-type: none"> Distinguish between permutations and combinations and identify situations in which each is appropriate. 	<ul style="list-style-type: none"> Calculate probabilities using permutations and combinations to count events. Define simple discrete random variables Compute conditional and unconditional probabilities in various ways, including by definitions, the general multiplication rule, and probability trees. 	<ul style="list-style-type: none"> Calculate a probability using the Fundamental Counting Principle.
	Objective 2: Use percentiles and measures of variability to analyze data. <ul style="list-style-type: none"> Compute different measures of spread, including the range, standard deviation, and interquartile range. Compare the effectiveness of different measures of spread, including the range, standard deviation, and interquartile range in specific situations. Use percentiles to summarize the distribution of a numerical variable. Use histograms to obtain percentiles. 	Objective 1: Formulate and answer questions by collecting, organizing, and analyzing data. <ul style="list-style-type: none"> Determine the quadratic regression equation for a given set of bivariate data using technology. Analyze the meaning of the maximum or minimum and intercepts of the regression equation as they relate to a given set of bivariate data. Make predictions and estimations and determine their reasonableness using a regression equation.
		<ul style="list-style-type: none"> Add, subtract, and multiply matrices (Precalculus) Find the multiplicative inverse of a matrix using paper and pencil for a 2 X 2 and technology for larger matrices. (Precalculus) Identify matrices that can be added, subtracted, or multiplied. (Precalculus)

		<ul style="list-style-type: none">• Demonstrate that matrix multiplication is not commutative. (Precalculus)• Identify additive and multiplicative identities and inverses of a matrix where they exist. (Precalculus)• Represent intervals with correct symbolic notation. (Precalculus)• Interpret rates of change by analyzing graphical and numerical data for quadratic and radical functions. (Precalculus)• Write the equation of a circle (Geometry) by completing the square.
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